

# Scenario 23 – Flow and Temperature Goals in Lower Feather River

- Goal - Develop consensus set of temperature and flow targets for Lower Feather River

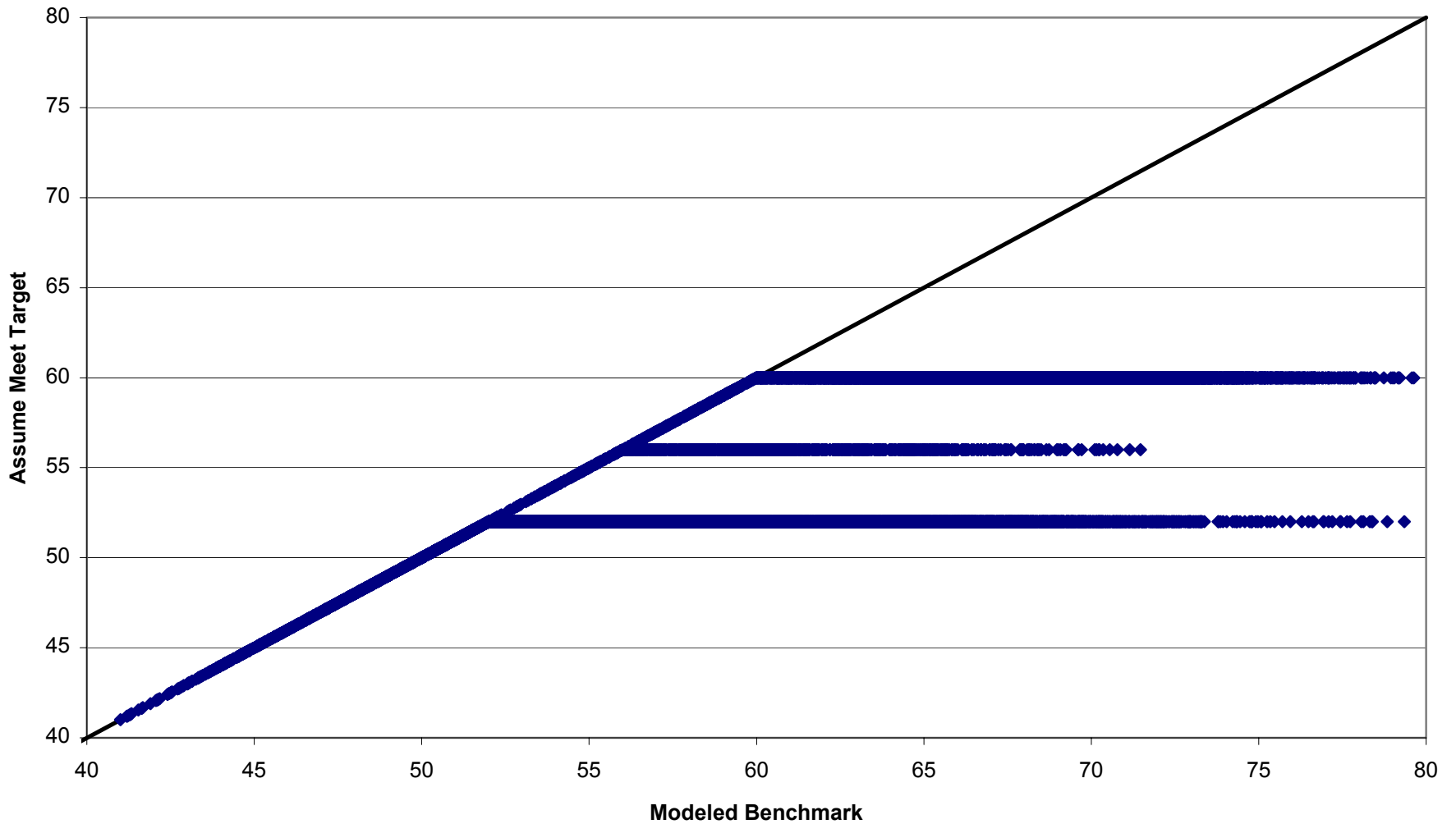
# Current Progress

- Desktop analysis of potential of meeting temperature targets at Honcutt Creek
- Analysis of appropriate locations in Lower Feather River for temperature requirements (upstream vs. downstream control)
- Desktop analysis of Lower Feather River temperature regime under different temperature operation schemes

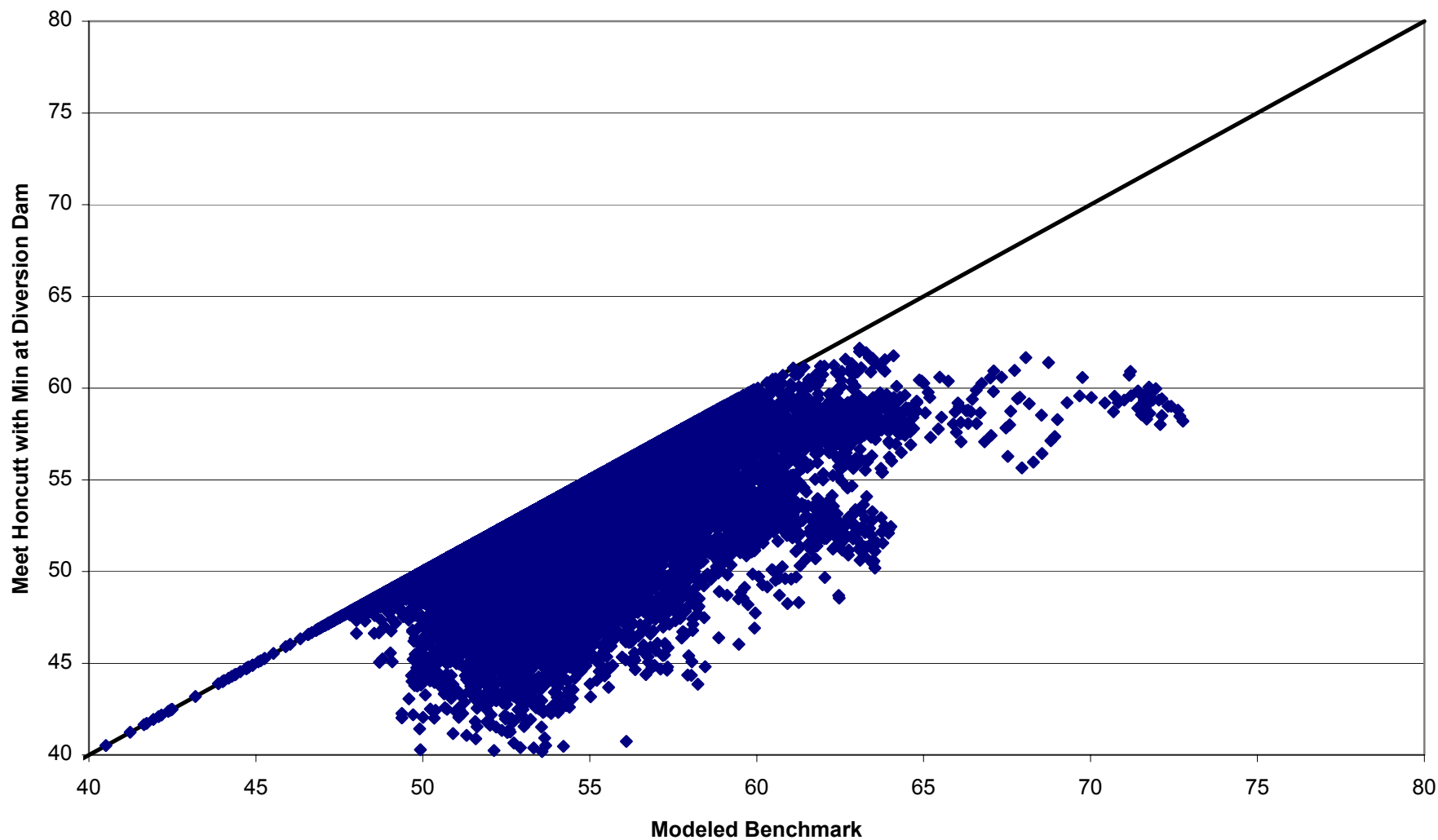
# Analysis of potential to meet temperature targets at Honcutt Creek

- Use Temperature Target 1 values from Integrated Water Temperature and Instream Flow Targets
- Use temperature and flow data from current Existing Condition benchmark simulation
- Assume all flow down Low Flow Channel and same temperature change/mile in Low Flow Channel as in High Flow Channel
- Compute temperature at Honcutt Creek assuming targets are met
- Compute required temperature at Diversion Dam to give computed temperatures at Honcutt Creek
- Examine cold water pool in Oroville Reservoir

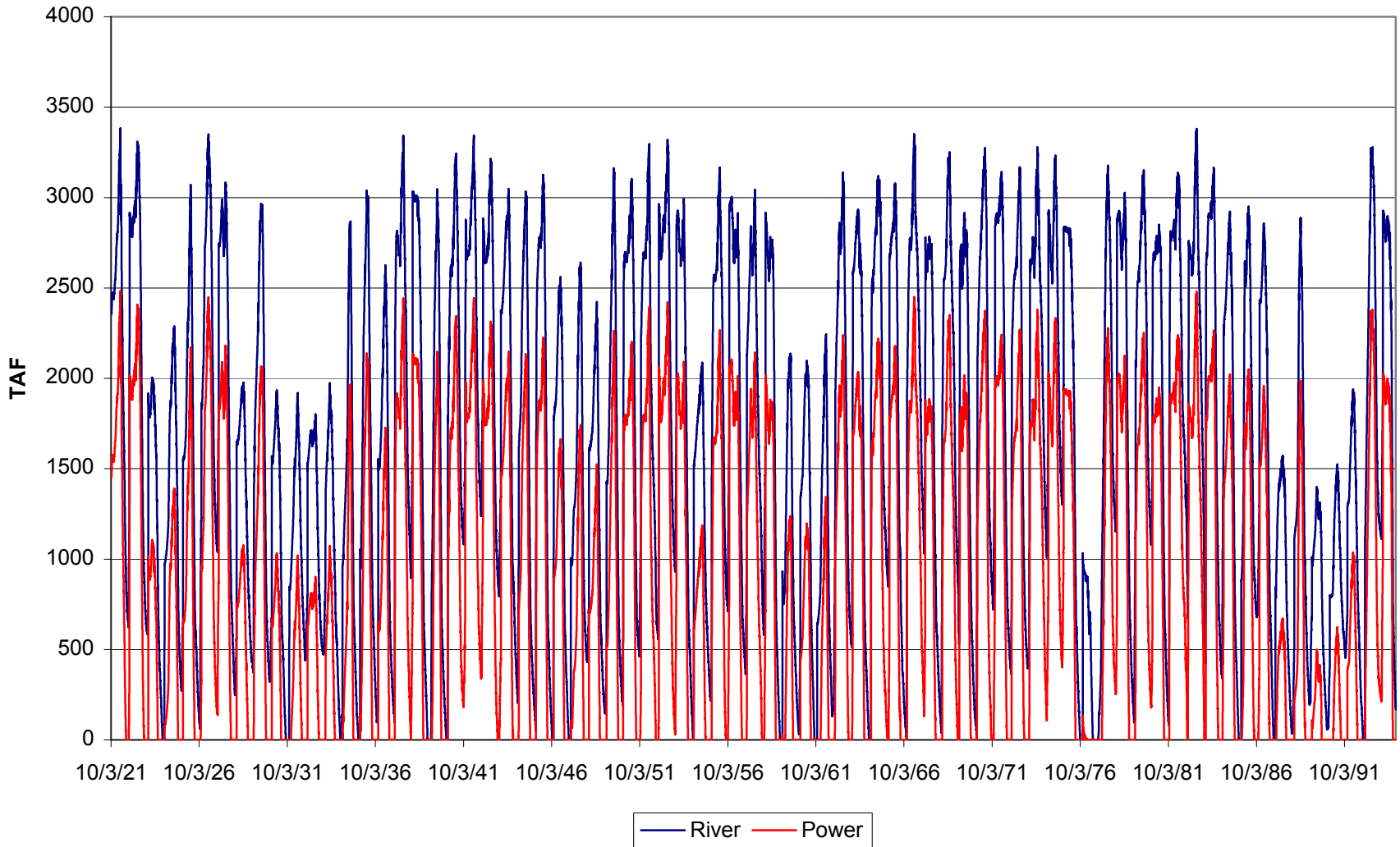
# Modeled Feather River at Honcutt Creek Temperature Vs Temperature Targets



**Feather River at Diversion Dam Temperature Required To Meet Honcutt Target  
All Flow In Low Flow Section**



**Oroville Cold Water Pool**  
**(Less than 15 Deg C (59 Deg F))**



# Conclusions about meeting Honcutt Creek targets

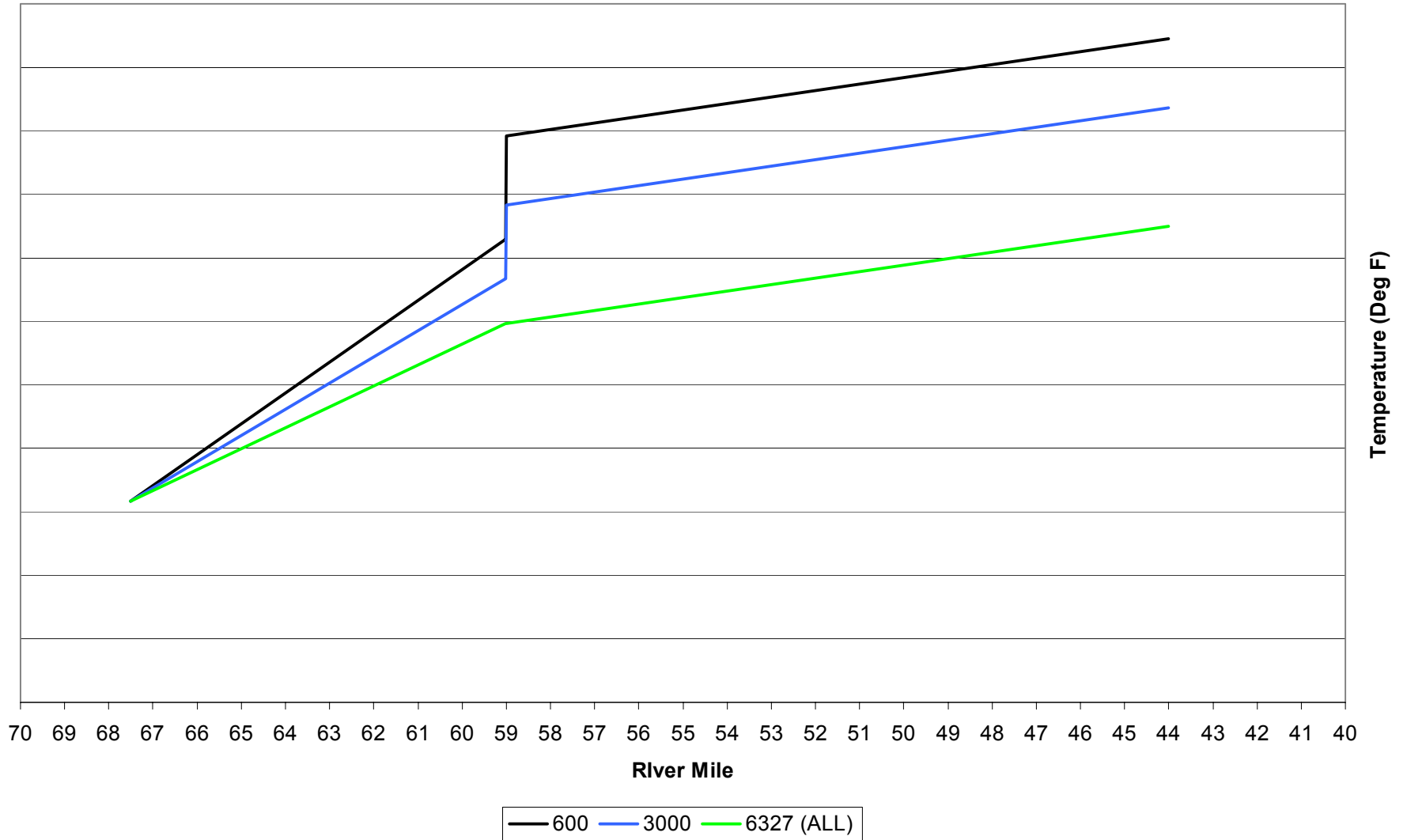
- Not enough cold water available to meet targets at Honcutt Creek
- Meeting targets at Honcut Creek would make upstream end of Low Flow Channel too cold for fishery

# Location of Temperature Requirements in Lower Feather River

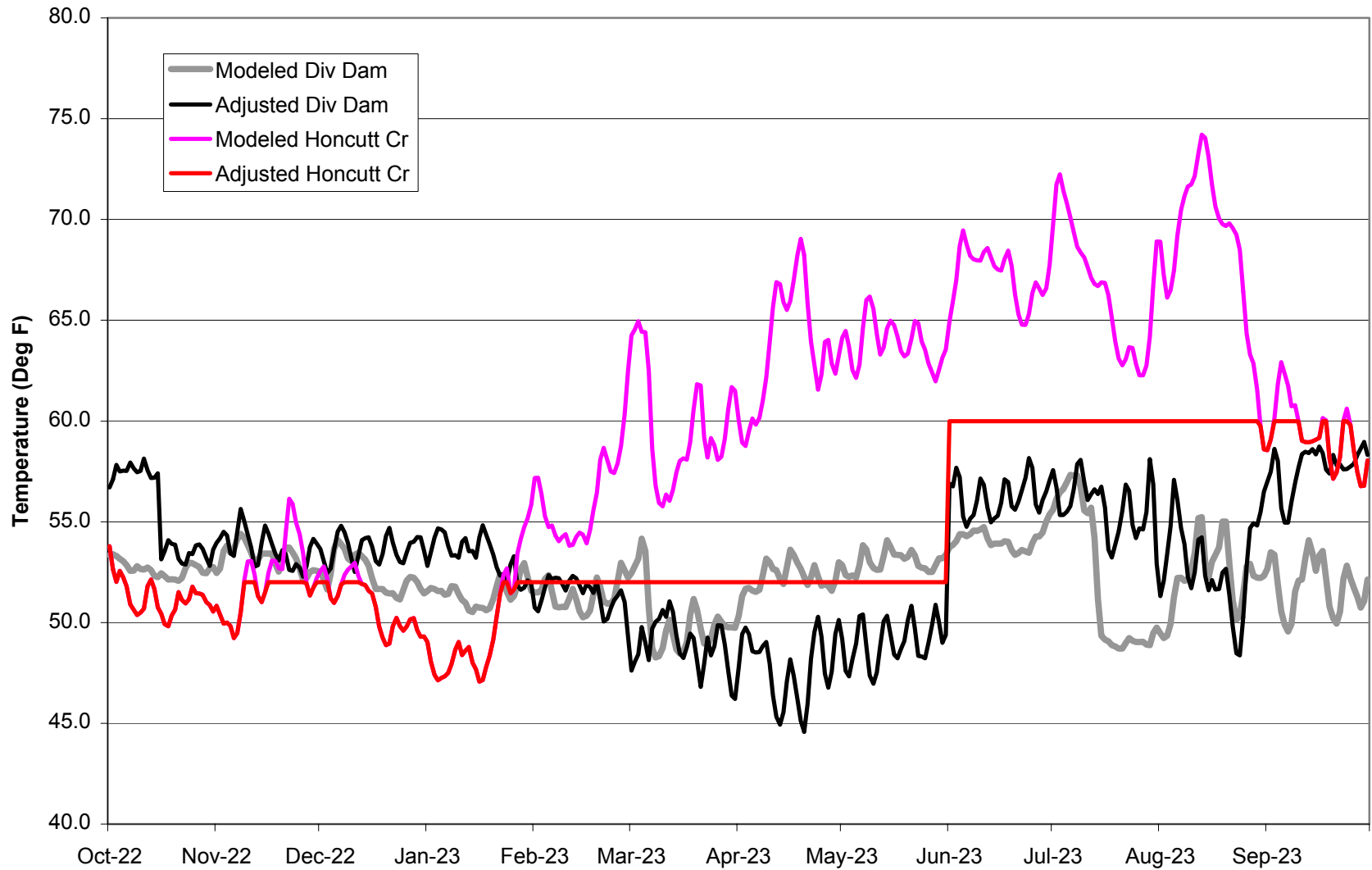
- Can only control temperature and flow at upstream end (Diversion Dam)
  - Temperature of release (Intake Stop logs, modify power operation, use of river valve, CWP and biology limited)
  - Proportion of total release to Low Flow channel (modify power operation)
  - Temperature and flow of Afterbay Release is a function of upstream control decision.



# Potential Feather River Temperature Profile Under Different Low Flow Channel Flows



Comparison of Modeled Vs Targeted at Diversion Dam and Honcutt Creek



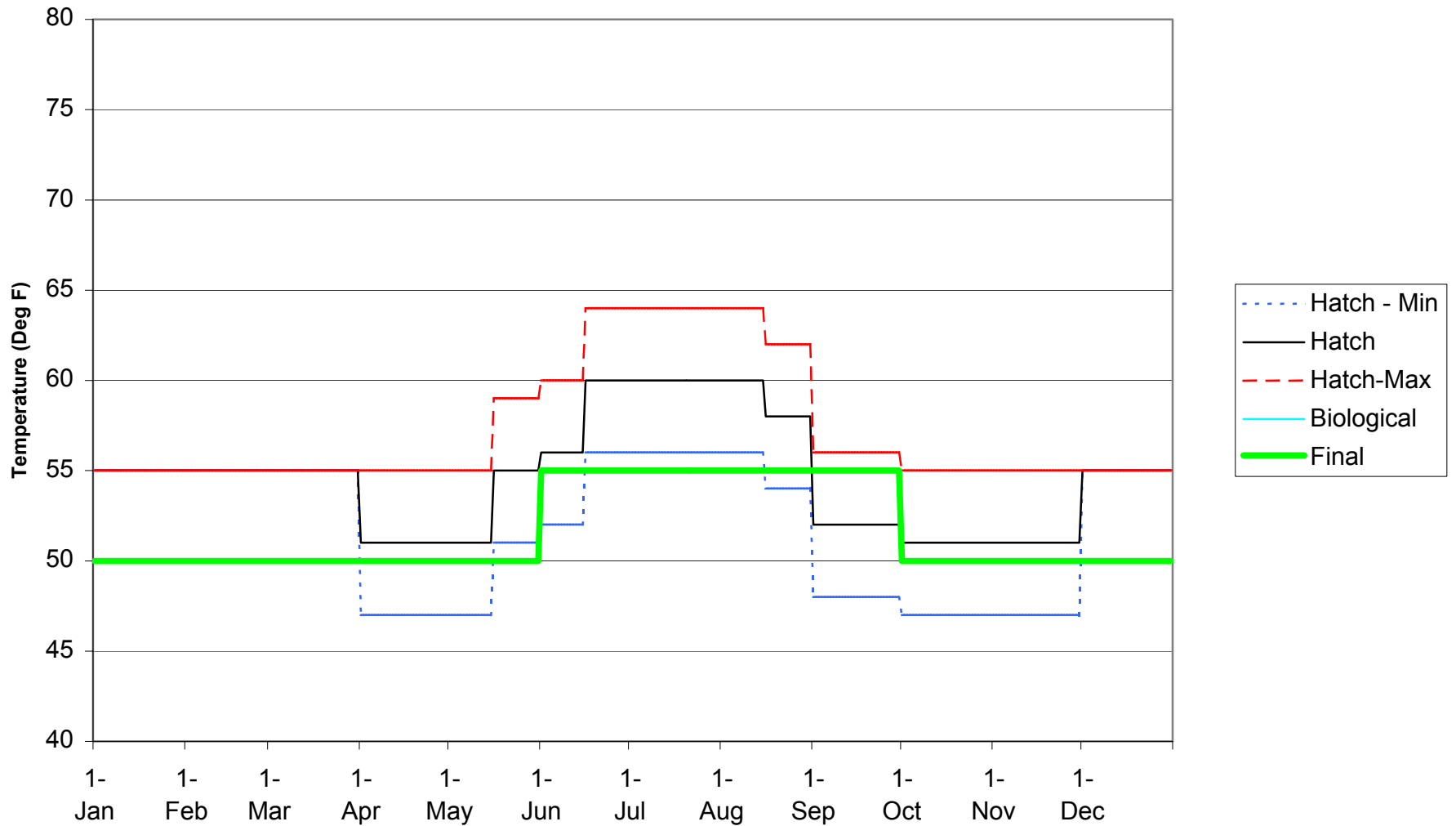
# Conclusions on location for Temperature and Instream flow requirements

- Recommend setting instream flow and temperature requirements at the upstream end of the reach makes sense because:
  - Controls temperatures throughout Lower Feather River
  - Ensures that upstream end of reach is not too cold for fishery objectives
  - Simplifies cold water pool management over the year to meet fishery objectives
  - Improves temperatures throughout entire reach, risk of not meeting objectives is at far downstream end of reach

# Initial Trial Upstream Control Values

- Set goal as cold as possible without concern of CWP availability
- Do not go below 50-55 degrees
- Minimum of hatchery and lower limit but not less than lower limit

# Feather River At Diversion Dam Temperature Targets



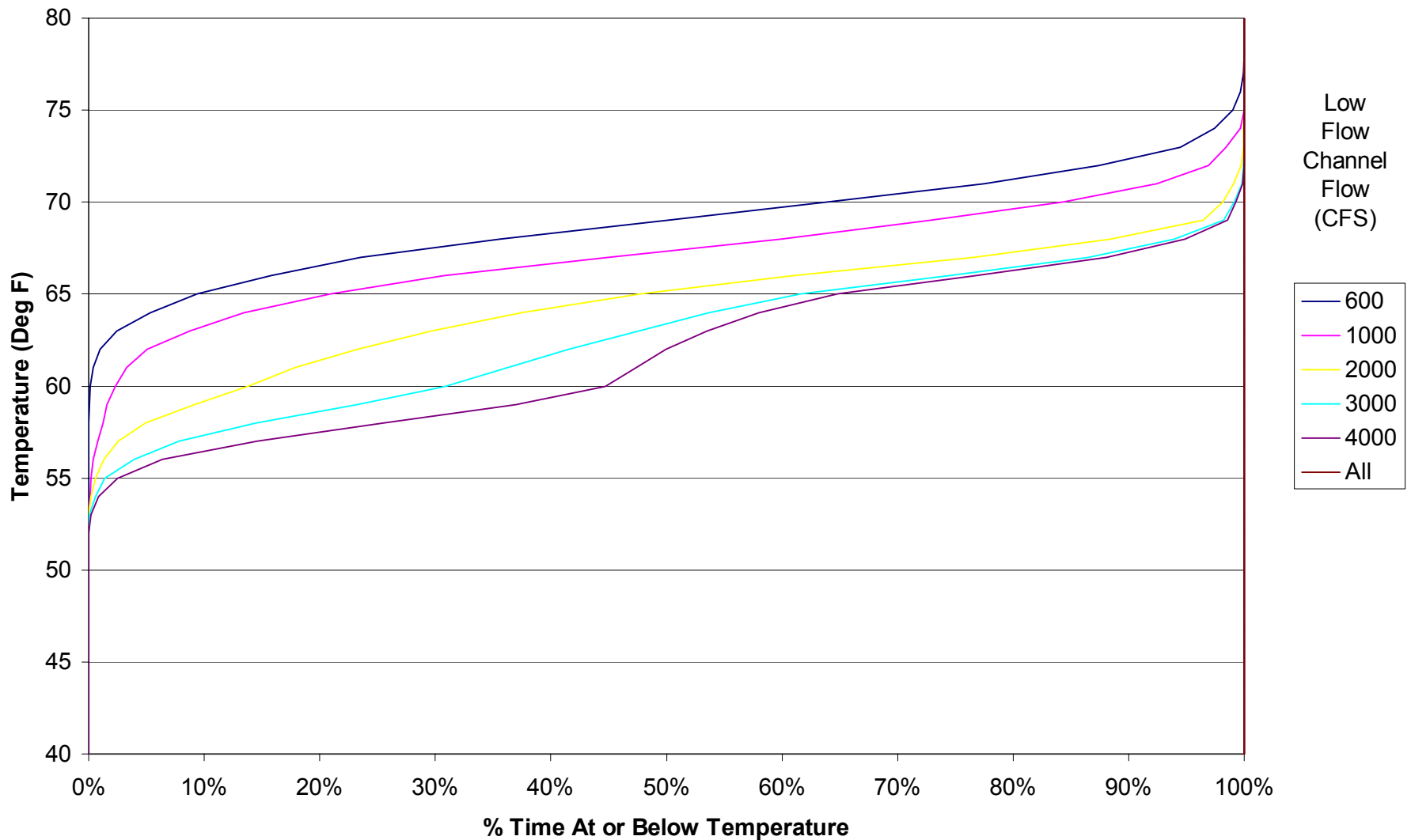
# Analysis Procedure

- Developed a simple “screening” temperature model of the system
- Temperatures at Diversion Dam, Afterbay Return, and Honcutt Creek are computed
- Use this model to evaluate different scenarios for feasibility

# Screening Model Assumptions

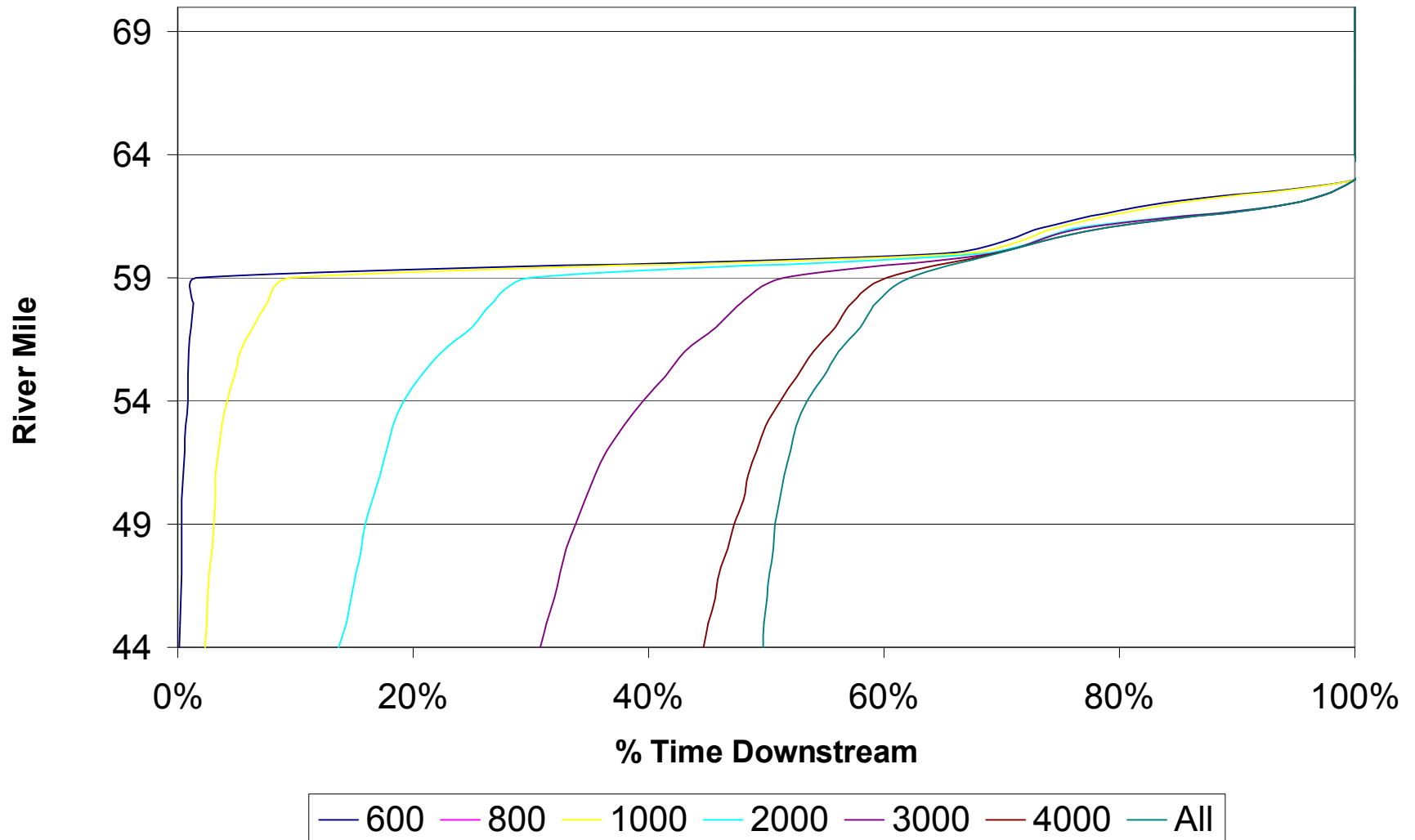
- Use Existing Benchmark temperature simulation results (these are being updated)
- No change in flow in High Flow section (total release from Oroville unchanged)
- Temperature change/mile in High Flow section computed from benchmark data.
- Temperature change/mile in Low Flow section estimated based on change in High Flow section, flow in Low Flow section, and information from Scenario 17
- Afterbay Release Temperature does not change with flow

## Feather River Temperature Honcutt Creek In August





## Projected Location @ 60 in August (RM)



# Next Steps

- Work with Environmental Workgroup to refine temperature and flow limits
- Update analysis with new benchmark results when available
- Define scenarios for detailed modeling for analysis of
  - Ability to meet different targets
  - Temperature results of different targets
  - Power generation impacts of different targets